Birds

Source: D. Hanni,
Rocky Mountain Bird Observatory

PROJECT SUMMARY

ROBERT BENNETTS

Introduction and Background

Bird communities reflect a broad range of ecosystem conditions including water quality and vegetation structure, composition, and productivity. Birds are subject to pressures beyond site boundaries, such as historic and current land use, visitation, development, air and water pollution, and other changes in the surrounding landscape. Birds are also increasingly recognized as indicators of long-term trends in ecosystem conditions and the success of management practices. Monitoring populations can also be used to examine the broad effects of human activities and measure the sustainability of those activities. Long-term population monitoring provides information for effective management and conservation of birds.

In 2005, the National Park Service, in cooperation with the Rocky Mountain Bird Observatory, initiated a bird inventory and monitoring program in Sand Creek Massacre National Historic Site (NHS). During this pilot year, the Rocky Mountain Bird Observatory conducted standardized monitoring and inventory techniques at the site that are consistent with those conducted at regional scales. Data will be compared with and contribute to state and regional inventory and monitoring efforts.

Methods

Inventory

The primary goal of the inventory was to determine the status of expected species not previously documented in the site. In general, field observers attempted to visit and thoroughly search every habitat in the park that could potentially yield a new species for each inventory such as wetlands, rivers, creeks, and prairie dog towns. Researchers attempted to cover all areas of the park, particularly those not covered by the inventory. Transects were established in upland sage and riparian habitat. Observations were conducted when breeding birds were most likely to be detected on three separate days during the breeding season, late April through July.

Monitoring

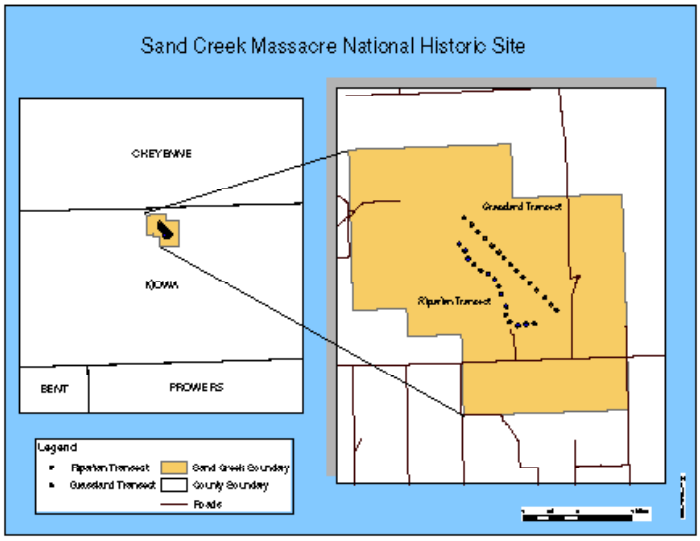
Surveys were conducted along the riparian transect in the morning before sunrise and by 10 a.m. Researchers recorded atmospheric data, including temperature, cloud cover, precipitation, wind, and the time of observation as well as primary and secondary habitat types in the area, primary and secondary understory types, and percent coverage of each in the area. All bird detections were recorded, including birds flying over but not using the immediate surrounding landscape. "Fly-over" birds were excluded from density analyses. For each bird detected, observers recorded the species, sex, method of detection (e.g., call, song, drumming) and distance from the observation point.

Results

Researchers compiled an initial species list consisting of 59 documented species, including two listed as species of special concern by Colorado: the burrowing owl (*Athene cunicularia*) and mountain plover (*Charadrius montanus*). Of the 59 species documented, 16 are listed as species of conservation concern or stewardship species in the shortgrass prairie system conservation region, by Partners in Flight. No federally listed species were detected.

Discussion

The diverse habitat and various conditions within Sand Creek Massacre NHS support the life history requirements of numerous species in various seasons. The site is a shortgrass prairie composed of two main habitats, riparian and upland shortgrass prairie, and a mosaic of conditions, including tall



Location of transects in Sand Creek Massacre National Historic Site.

grass structure and prairie dog burrows. The site's habitats and conditions are important to many bird species with a wide range of habitat needs. Riparian areas are locally and regionally important for migratory populations and provide necessary stopover habitat for long and short distance migrations, which are generally limited in shortgrass prairie ecosystems. Stopover habitat allows birds to replenish essential reserves for their flight to breeding areas. The combination of shortgrass prairie and riparian habitats in Sand Creek Massacre NHS are uncommon in shortgrass prairie ecosystems and are important to numerous species of birds, including several species of concern.

The study detected species that require high grass structure, such as the short-eared owl (*Asio flammeus*) and dickcissel (*Spiza americana*), as well as species that prefer low grass structure and prairie dog burrows, such as the burrowing owl and mountain plover which are also listed by Partners in Flight. Birds detected during the survey represent a diversity of habitat use in the site. This mix of birds suggests the shortgrass prairie habitat mosaic is healthy.

Stopover locations, such as the site's riparian habitat, are limited in the shortgrass prairie and are vital to long- and short-distance migratory birds. Several species were documented using the riparian habitats, though they do not breed in the area: chestnut-sided warbler (*Dendroica pensylvanica*), clay-colored sparrow (*Spizella pallida*), hermit thrush (*Catharus gattatus*), indigo bunting (*Passerina cyanea*), Lincoln's sparrow (*Melospiza lincolnii*), Swainson's thrush (*Catharus ustulatus*), and. Riparian areas also provide suitable habitat for many probable breeding species, most commonly the western kingbird (*Tyrannus verticalis*), orchard oriole, and mourning dove (*Zenaida macroura*). Estimated densities were calculated for these species, as well as the western meadowlark. The red-headed woodpecker (*Melanerpes erythrocephalus*), a less common species and a species of conservation concern listed by Partners in Flight, is a probable breeding species detected in the riparian habitat. Several western meadowlarks (*Sturnella neglecta*), a common species, were detected during the study and prefer upland habitats, which are present in the site's open riparian habitat.

The upland habitats also host many species listed by the Partners in Flight program. These species include the Cassin's sparrow (*Aimophila cassinii*), dickcissel, grasshopper sparrow, horned lark (*Eremophila alpestris*), lark bunting (*Calamospiza melanocorys*), lark sparrow (*Chondestes grammacus*), northern harrier (*Circus cyaneus*), Say's phoebe (*Sayornis saya*), scaled quail (*Callipepla squamata*), short-eared owl, Swainson's hawk (*Buteo swainsoni*), western kingbird, and western meadowlark.

Sand Creek Massacre NHS could potentially support other species during their life history. These species include the ferruginous hawk (*B. regalis*), golden eagle (*Aquila chrysaetos*), lesser prairie chicken (*Tympanuchus pallidicinctus*), prairie falcon (*Falco mexicanus*), long-billed curlew (*Numenius americanus*), and northern bobwhite (*Colinus virginianus*), though they were not detected during the survey.

The study recommended nocturnal owl surveys, completing transects in both the riparian and upland habitat, and surveying transects more than once during the breeding season. Birds documented during the survey suggest the need to manage for taller grass species and prairie dog communities which support sensitive species.

Literature Cited

Hanni, D. 2005. Sand Creek Massacre National Historic Site inventory and monitoring final report. Report to National Park Service. CO: Rocky Mountain Bird Observatory.

Project Contact

David Hanni, Monitoring Division, Rocky Mountain Bird Observatory, Fort Collins, CO 80521 USA